CLAIMS

I claim:

1. An electronic relative position determining system for locating the relative position of an object comprising:

a monitoring unit;

a tracked unit placed on said object receiving a monitor direct sequence spread spectrum (MDSSS) signal from said monitoring unit and transmits to said monitoring unit a tracked direct sequence spread spectrum (TDSSS) signal which is correlated to said monitor direct sequence spread spectrum (MDSSS) signal; and

a first phase detector placed on said monitor unit comprised of a pseudo-random noise (PN) sequence correlator to compare a first frequency component of said TDSSS signal to a monitor first frequency component of said MDSSS signal creating a first phase difference utilized for a coarse accuracy determination of an object ranging distance relative to said monitoring unit without need for external phase or timing reference or previously established range.

2. An electronic system as recited in Claim 1, further comprising:

a second phase detector included within said monitoring unit that compares a tracking second frequency component of said TDSSS signal with a monitor second frequency component of said MDSSS signal to create a second phase difference; and

a first detector phase error output determines number of repeated frequency periods of said second frequency component of said TDSSS signal for a medium accuracy determination of said object ranging distance relative to said monitoring unit.

3. An electronic system as recited in Claim 2, further comprising:

a third phase detector comparing a tracking third frequency component of said TDSSS signal with a monitor third frequency component of said MDSSS to create a third phase difference: and

an output of said second phase detector determines number of repeated frequency cycles of said tracked third frequency of said TDSSS signal for fine accuracy determination of said object ranging distance relative to said monitoring unit.

4. An electronic system as recited in Claim 1, wherein said first frequency component of said TDSSS is a repetition rate of a tracked pseudo-random noise (PN) sequence and said first monitor frequency component of said MDSSS is a repetition rate of a monitor pseudo-random noise (PN) sequence.

5. An electronic system as recited in Claim 1, wherein said tracking second frequency component of said TDSSS signal is a chipping frequency of said tracked pseudo-random noise (PN) sequence and said second frequency component of said MDSSS signal is a chipping frequency of said monitor pseudo-random noise (PN) sequence.

6. An electronic system as recited in Claim 1, wherein said tracking third frequency component of said TDSSS signal is a carrier frequency and said monitor third frequency component of said MDSSS is a carrier frequency.

7. An electronic system as recited in Claim1, wherein said monitoring unit comprises a first monitor antenna disposed on said monitoring unit and a second monitor antenna disposed on said monitoring unit, which said first monitor antenna is cross-polarized relative to said second monitor antenna for measuring said object ranging distance and relative angle from said monitoring unit.

8. An electronic system as recited in Claim 1, wherein said tracking second frequency component of said TDSSS signal is a chipping rate at which a pseudo-random noise (PN) sequence is output from a first shift register circuit and a second shift register circuit placed within said monitoring unit, creating said second phase difference between said tracking second frequency component of said TDSSS signal and said monitor second frequency component of said MDSSS signal.

9. An electronic system as recited in Claim 1, wherein said tracked unit receives said monitor direct sequence spread spectrum (MDSSS) signal from said monitoring unit, wherein said tracked unit includes a pseudo random noise (PN) correlator that locks said MDSSS signal with said TDSSS signal.

10. An electronic system as recited in Claim 1, wherein said tracked unit receives a monitor carrier frequency from said monitoring unit, wherein said tracked unit includes a phase lock loop that locks said monitor carrier frequency with tracked carrier frequency.

11. An electronic system as recited in Claim 1, wherein said monitoring unit further comprises a monitor compass which displays location of said tracked unit within several concentric rings to provide a visual display for a user of said object ranging distance.

12. An electronic system as recited in Claim 1, wherein said monitor unit further comprises a monitor compass which displays said object ranging distance of said tracked unit relative to said monitoring unit, and a user selects one zone from several concentric rings of coverage.

13. An electronic system for locating an object comprising:

a monitoring unit;

a tracked unit placed on said object receiving a monitor direct sequence spread spectrum (MDSSS) signal from said monitoring unit and transmits to said monitoring unit a tracked direct sequence spread spectrum (TDSSS) signal which is correlated to said monitor direct sequence spread spectrum (MDSSS) signal;

a first phase detector placed on said monitoring unit to compare a first frequency component of said TDSSS signal to first frequency component of MDSSS creating a first phase difference utilized for a coarse accuracy determination of said object distance ranging relative to said monitoring unit without need for external phase or timing reference or previously established range;

a second phase detector included within said monitoring unit that compares a second frequency component of said tracked TDSSS signal with a monitor second frequency component of said MDSSS for a medium accuracy determination of range relative to monitoring unit of said object range,

wherein said first frequency component of said TDSSS signal is a repetition rate of said tracked pseudo-random noise (PN) sequence; and

wherein said second frequency component of said TDSSS signal is a chipping frequency of said tracked pseudo-random noise sequence.

14. An electronic system as recited in Claim 13, further comprising:

a third phase detector comparing a third frequency of said TDSSS signal with a third monitor frequency component to create a third phase difference; and

an output of said second phase detector determines number of repeated frequency cycles of said third frequency component of said TDSSS signal for fine accuracy determination of said object ranging distance between said monitoring unit and tracked unit.

15. An electronic system as recited in Claim 13, wherein said third frequency component of said TDSSS signal is a carrier frequency and said third frequency component of said MDSSS signal is a carrier frequency.

16. An electronic system as recited in Claim 13, wherein said monitoring unit comprises a first monitor antenna placed on said monitoring unit and a second monitor antenna placed on said monitoring unit, which said first monitor antenna is cross-polarized relative to said second monitor antenna for measuring said object ranging distance and relative angle from said monitoring unit.

17. An electronic system as recited in Claim 13, wherein second frequency component of said TDSSS signal is a chipping rate at which a pseudo-random noise (PN) sequence is output from a first shift register circuit and a second shift register circuit placed with said monitoring unit, creating said second phase difference between said second frequency component of said TDSSS signal and said monitor second frequency component of said MDSSS signal.

18. An electronic system as recited in Claim 13, wherein said monitoring unit further comprises a monitor compass which displays object ranging distance between said tracked unit and said monitoring unit, wherein said a user selects one zone from several concentric rings of coverage for tracking said tracked unit.

19. A method for detecting the range of an object comprising:

placing a tracked unit on said object;

transmitting a monitor MDSSS signal from a monitoring unit;

receiving said MDSSS signal at said tracked unit;

transmitting from said tracked unit a tracked TDSSS signal to said monitoring unit which is correlated to monitor MDSSS signal;

receiving said TDSSS signal at said monitoring unit;

comparing a first frequency component of said TDSSS signal to a first frequency component of said MDSSS signal within a first phase detector within said monitoring unit; and

outputting a first phase shift for coarse accuracy determination of said object range relative to said monitoring unit.

20. The method of Claim 19 further comprising the steps of:

comparing a second frequency of said TDSSS signal to a second frequency component of said MDSSS signal within a second phase detector within said monitoring unit;

outputting a second phase shift;

determining the number of repeated frequency periods of said second frequency of said TDSSS signal.

21. The method of Claim 20 further comprising the steps of:

comparing a third frequency of said TDSSS signal to a third frequency component of said MDSSS signal within a third phase detector within said monitoring unit;

outputting a third phase shift;

determining the number of repeated frequency periods of said third frequency of said TDSSS signal.